

selves in order to underwrite a similar bank in Santa Rosa.

"Many people still think that blood banks are needed only during a war, that only war's wounds require blood transfusions. That thought is entirely erroneous. Democracy's battlefields have, in the past, been her highways, her farms, and her great industrial plants.

"What of the future? What of the medical problem posed by just two recent developments, supersonic speed and the atomic bomb? Blood and blood plasma will form the therapeutic keystone in the treatment of casualties when and if a Hiroshima occurs in this part of the country. Adequate blood coverage for the state, high standards of service, coordination of all banks, reciprocity between banks, similar-

ity of blood banking procedures, fast and efficient distribution systems, adequate mobile units geared to serve inaccessible areas, auxiliary substations, walking blood banks—these and many other problems present themselves for speedy and precise settlement. These are medical problems of the medical profession.

"We must gird for the long tasks and work together for the common weal. Let's get on with the job. Tomorrow may be too late. The solution rests with organized medicine. Why should not California have its own state-wide blood bank program, sponsored, implemented and operated by physicians?

"JOHN R. UPTON, M.D.,

"Chairman, C.M.A. Blood Bank Commission."



Letters to the Editor . . .

Tuberculous Lympholysis

It was shown by Rich,⁵ Heilman³ and others that splenic explants from tuberculous animals are killed when grown in concentrations of tuberculin that are harmless to normal tissue explants. Meyer⁴ found that this hypersusceptibility is not a manifestation of classical anaphylaxis, since explants from animals sensitized to horse serum are not injured by the addition of horse serum to the culture fluid.

Detailed study of this cellular hypersensitivity is reported by Favour¹ of the Rockefeller Institute. Tuberculosis was produced in mice and guinea pigs by subcutaneous or intravenous injection of six to ten-day-old cultures of tubercle bacilli. Mice surviving three to four weeks and guinea pigs surviving two to six months were selected for cytologic study.

Suspensions of guinea pig lymphocytes, monocytes and granulocytes were prepared from pooled blood samples by the cell fractionation technique suggested by Ferrebee and Geiman.² This fractionation is based on the different specific gravities of different white blood cells, and their centrifugation from suspensions in standard dilutions of bovine albumin. A similar technique was used in fractionating suspensions of mouse splenic cells.

Toxic effects were demonstrated by adding 0.2 cc. cell suspension to 0.2 cc. dilute tuberculin (or other bacterial extract, such as *S. enteritidis* extract) in 0.5 cc. albumin solution. Lytic effects were measured by the resulting reduction in differential white cell count at the end of 60 to 90 minutes. In a typical experiment a suspension of splenic cells from a tuberculous mouse was reduced from an initial white cell count of 15,890 to 12,680 by 60 minutes' exposure to

dilute tuberculin. Differential counts showed that this reduction was due to a 56 per cent reduction in lymphocytes unaccompanied by a loss of other cell types.

In a second experiment there was by the end of 90 minutes a 36 per cent lysis of lymphocytes from a tuberculous guinea pig, with no distinction of other cell types. Lymphocytes from normal mice or guinea pigs or from animals infected with *S. enteritidis* were not lysed by the same concentration of tuberculin. Lymphocytes from animals infected with *S. enteritidis*, however, were specifically lysed by soluble substances derived from cultures of *S. enteritidis*. Control tests with lymphocytes from normal or tubercular animals were not lysed by any extract thus far tested. Tubercular lympholysis can also be demonstrated in fresh heparized mouse or guinea pig blood to which tuberculin is added.

No theory is as yet proposed to explain this acquired specific lymphocyte hypersensitivity. Conceivably it is due to a specific activation of autolytic enzymes, a futuristic theory of possible clinical interest.

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